Remarks

This is in response to the Office Action dated June 22, 2005. The Office Action first objected to claims 2, 6, 11, 12, 16, 19 and 29 for various informalities. The Office Action next rejected claims 1-53 under 35 U.S.C. §101 as being directed to nonstatutory subject matter. Finally, the Office Action also rejected claims 1-53 under 35 U.S.C. §102(b) as being anticipated by the Sharma et al. publication ("Toward Multimodal Human-Computer Interface", Proceedings of the IEEE, vol. 86, Issue 5, May 1998, pages 853-869).

Applicants have amended claims 2, 6, 7, 11, 12, 19 and 29 to correct the informalities identified by the Office Action. Claims 1, 2, 3 and 45 have been amended in response to the rejection under 35 U.S.C. §101. Applicants traverse the rejections under 35 U.S.C. §102(b).

Claims 1-53 remain under consideration.

Objections to the Claims:

The Office Action first objected to claims 2, 6, 11, 12, 16, 19 and 29 for various informalities. In response to these objections, applicants have amended claims 2, 6, 7, 11, 12, 19 and 29. Applicants could not determine how the objections raised were intended to be applied to claim 16. If the Office persists in this objection to claim 16, applicants request that the details of that objection be pointed out with particularity.

Regarding claim 2, the Office Action indicated that it was not clear what the Applicant meant by the term "that". In response, Applicants have deleted this term for clarity.

Regarding claim 6, the Office Action indicated that there may have been some claim language missing. In response, Applicants have amended claim 6 for clarity to read:

> "The multimodal recognition system of claim 5, wherein the multimodal recognition subsystem further comprises a third subsystem that inputs the second finite-state transducer and outputs a recognition based on said at least one finite-state machine.

Thus, claim 6 is now clear.

Claim 7 has been amended to conform to the amendment of claim 6 to now claim, in part:

> a multimodal recognizer that inputs said at least one finite-state machine and outputs the multimodal recognition based on said at least one finite-state machine and the third finite-state transducer.

Thus, claim 7 is also clear and possesses adequate antecedent basis.

Regarding claim 11, the Office Action indicated that it was not clear what was meant by the term "that other mode recognition system." In response, Applicants have amended claim 11 to state, in part: "at least one other mode recognition subsystem in said plurality is usable as a recognition model by said at least one other mode recognition subsystem." Accordingly, claim 11 is now clear regarding the reference to the at least one other mode recognition system in said plurality.

Regarding claim 12, Applicants presume that the Office Action objected to the terms "each other mode recognition system" and "that other mode recognition system" as originally claimed in claim 12. In response to this presumed objection, applicants have amended claim 12 to replace each of these phrases with the phrase "said at least one other mode recognition subsystem." Thus, claim 12 is now clear and possesses adequate antecedent basis for all terms.

Regarding claim 19, the Office Action stated it was not clear how the second mode related to the first mode to a meaning of a combination of the first and second modes. Also, the Office Action objected to the phrase "a possible meaning." In response, Applicants have amended the first element of claim 19 to claim:

> the third finite-state transducer relates the first one of said plurality of modes and the second one of said plurality of modes to a meaning of a combination of said first one of said plurality of modes and said second one of said plurality of modes; . . .

Thus, it is now clear that the third finite-state transducer functions to relate the first one of said plurality of modes and the second one of said plurality of modes to a meaning of the combination of those modes, as identified by the recognition system. Applicants have amended the second element of claim 19 to delete the word "possible" and, therefore, the second element of claim 19 now clearly claim that the "meaning subsystem . . . outputs . . . a meaning lattice based on the first finite-state machine and the third finite-state transducer." Thus, claim 19 is now clear and possesses adequate antecedent basis for all terms.

Finally, regarding claim 29, Applicants presume that the Office Action intended to object to this claim because the terms "the gesture mode" and "the speech mode" did not contain adequate antecedent basis, as well as for reasons similar to the objections to claim 19 regarding the term "possible meaning" as originally claimed. In response, applicants have replaced the

above phrases with "a gesture mode", "a speech mode" and "meaning", respectively. Thus, claim 29 is now clear and posses adequate antecedent basis for all terms.

Applicants request the removal of the foregoing objections to the claims.

Rejection: 35 U.S.C. §101

The Office Action rejected claims 1-53 under 35 U.S.C. §101 as being directed to nonstatutory subject matter. Applicants have claims 1, 2, 3 and 45.

The Office Action rejects claims 1-53 as being abstract ideas without a claimed limitation to a practical application. Applicants disagree. Multimodal recognition (e.g., speech, gesture recognition) is a practical application of the claimed elements of claims 1-53 in and of itself. Applicant refers the Examiner to the "Examination Guidelines for Computer-Related Inventions, Final Version" issued by the Patent and Trademark Office published on February 28, 1996 in the Federal Register at 61 Fed. Reg. 7478 ("Guidelines") and as has been published in revised form as MPEP § 2106. Applicant particularly notes Section IV(B)(2)(e) of the Guidelines, which states

> "Office personnel must analyze the claim as a whole, in light of the specification, to understand what subject matter is being manipulated and how it is being manipulated. During this procedure, Office personnel must evaluate any statements of intended use or field of use, any data gathering step and any post-manipulation activity. *Only when the claim is devoid of any limitation to a practical application in the technological arts should it be rejected under § 101.*" (emphasis added)

Support for this standard is also provided in *Markman v. Westview Instruments*, in which the court held:

> Office personnel must rely on the applicant's disclosure to properly determine the meaning of the claims. *Markman v. Westview Instruments*, 52 F.3d 967, 980, 34 USPQ2d 1321, 1330 (Fed. Cir.) (*en banc*), *aff'd*, U.S. , 116 S. Ct. 1384 (1996).

Thus, a rejection under 35 U.S.C. §101 is proper only if, in light of the specification, a claim is devoid of any limitation to a practical application in the technological arts. Using this test, in light of the specification, the present invention as claimed is not devoid of any limitation to a practical application.

However, in order to expedite prosecution of this application, claims 1, 2 and 3 have been amended as suggested by the Examiner to add the limitation: "means for receiving said utterance" and claim 45 has been amended to add the limitation "receiving said multimodal utterance".

Thus, for the foregoing reasons, claims 1, 2, 3 and 45 as amended are not directed to purely abstract ideas and posses adequate claimed structure and adequately identified practical application. Accordingly, claims 1, 2, 3 and 45 are directed to statutory subject matter. As a result, claims 4-44 and 46-53 are also directed to statutory subject matter.

Applicants request the removal of the rejection under 35 U.S.C. §101.

Rejection: 35 U.S.C. §102(b)

The Office Action also rejected claims 1-53 under 35 U.S.C. §102(b) as being anticipated by the Sharma reference cited herein above. In order for a claim to be anticipated under 35 U.S.C. 102, each and every limitation of the claim must be found either expressly or inherently in a single prior art reference. PIN/NIP, Inc. v. Platte Chem. Co., 304 F.3d 1235, 1243 (Fed. Cir. 2002). Applicants traverse. In the present case, Sharma does not show each and every limitation of claims 1-53. Therefore, Applicants request the withdrawal of the rejection under 35 U.S.C. 102(b).

Claim 1: Regarding claim 1, the Office Action cites FIG. 3 of Sharma as teaching the element of claim 1 of: "each finite state mode recognition system outputting at least one recognition lattice for each associated mode." The Office Action cites FIG. 3 and pages 856-858 of Sharma as teaching the claim element of "an n-tape finite state device that inputs n-1 recognition lattices from the plurality of finite-state mode recognition subsystems and outputs the multimodal meaning based on the n-1 recognition lattices." Applicants disagree that the cited portions of Sharma teach these elements of claim 1. FIG. 3 does not show a lattice as contemplated by claim 1. Instead, FIG. 3 only shows the different types of input modes possible (e.g., typing, handwriting, body movement, hand pressure, etc) and maps those modes to categories of input (e.g., position/motion, audio, video, etc). The lattice as claimed in claim 1 is described at least at page 7, paragraph [0023] of the specification. As described in that passage:

> the term lattice denotes a directed and labeled graph, which is possibly weighted. IN each lattice, there is typically a designated tart node "s" and a designated final node

> "t". Each possible pathway through the lattice from the start note s to the final node t induces a hypothesis based on the arc labels between each pair of nodes in the path. For example, in a word lattice, the arc labels are words and the various paths between the start node s and the final node t form sentences.

Accordingly, the term lattice in claim 1 refers to a lattice in the actual utterance recognition process, not a mapping of a specific input mode to a category of input. The Sharma reference makes no reference, teaching or other suggestion of the lattice as contemplated by the present application and claimed in claim 1. Thus, this element is not taught by Sharma.

Similarly, the cited portions of Sharma do not teach or make any other reference to an n-tape finite state device that inputs n-1 recognition lattices as taught by the respective claim 1 element quoted above. Instead, pages 856-858 of Sharma discuss the different modalities (types of input) used in human-computer interface (HCI) and how those modalities are mapped to input categories for use in HCI applications. In other words, the cited passage of Sharma merely describes FIG. 3 in large part. However, no reference or teaching of an n-tape finite state device that inputs n-1 recognition lattices is made. Accordingly, this element is also not taught by Sharma.

Thus, for the foregoing reasons, Sharma does not teach all the elements of claim 1 and, as a result, claim 1 is not anticipated by Sharma. Accordingly, claim 1 is allowable over Sharma.

Claim 2: The Office Action next rejects claim 2 over the same cited passage of Sharma, specifically FIG. 3 and pages 856-858 of that reference. In particular, the Office Action states that this passage of Sharma teaches the following elements of claim 2:

> a pair of finite-state mode recognition systems, each finite-state mode recognition system usable to recognize one of the associated modes, each finite-state mode recognition system outputting at least one recognition lattice for each associated mode; and
>
> a multimodal recognition system that inputs a recognition lattice from each of the pair of mode recognition systems and outputs the multimodal meaning for the pair of associated modes based on the plurality of recognition results, comprising:
>
> a first system that inputs the pair of recognition lattices and outputs a combined recognition finite-state transducer;
>
> a second system the inputs the combined recognition finite-state transducer and outputs a combined recognition finite-state machine, and
>
> a third system that inputs the combined recognition finite-state machine and a multimodal meaning grammar and outputs the multimodal meaning.

However, for the reasons as described above in association with claim 1, the cited portions of Sharma do not teach anything related to lattices as is contemplated and claimed in claim 2 of the present application. In addition, these portions do not teach outputting a combined recognition finite-state transducer, a combined recognition finite-state machine or outputting a multimodal meaning as a function of said finite state machine and a multimodal meaning grammar. Once again, FIG. 3 and pages 856-858 of Sharma only discuss the different modalities (types of input) used in human-computer interface (HCI) and how those modalities are mapped to input categories for use in HCI applications

For these reasons, Sharma does not teach all the elements of claim 2. Therefore, claim 2 is not anticipated by the Sharma reference. As a result, claim 2 is also allowable over the Sharma reference.

Claim 3: Regarding claim 3, the Office Action once again cites the same passage of Sharma, FIG. 3 and pages 856-858 as teaching the element of claim 3 of "wherein each of the plurality of mode recognition subsystems and the multimodal recognition subsystem includes at least one finite-state machine having at least one tape." However, at no point in the cited portions does Sharma teach this element. Instead, the cited portions of Sharma merely teach that which is described above.

For these reasons, Sharma does not teach all the elements of claim 3. Therefore, claim 3 is not anticipated by the Sharma reference. As a result, claim 3 is also allowable over the Sharma reference. It follows that claims 4-44 are allowable as being dependent upon an allowable base claim.

Claim 4: The Office Action next rejects claims 4, stating that pages 861-863 of the Sharma reference teach the claim element of:

> a first subsystem . . . that generates a first finite-state transducer that relates the input recognition results from each of the at least one mode recognition subsystems to a recognition model of at least one other mode recognition subsystem.

However, while the cited portion of Sharma discusses how features from individual modalities can be integrated into more complex multimodal features, that portion of Sharma does not teach the above-cited claim element of claim 4 of a first subsystem . . . that generates a first finite state transducer . . .". Thus, claim 4 is allowable for this additional reason.

Other Dependent Claims: The Office Action next rejects claims 5-44, citing pages 864-866 of Sharma. This passage of Sharma discusses a case study of multimodal integration, at a relatively high level, as well as a review of various other prior multimodal systems and applications. Claims 5-7, 9-10, 15-21, 25-31 and 34-35 of the present application are rejected based on the above-cited passage of Sharma. These claims claim a finite state transducer that is input into a system or subsystem to produce in various ways a second finite state transducer, a projection of a finite state transducer, a finite state machine, or a lattice. At no point in the discussion of pages 864-866 of Sharma is there any reference or teaching of such a finite state transducer being input to a system or subsystem to produce the transducers/machine/lattice as claimed in these claims. Accordingly, Sharma does not anticipate claims 5-7, 9-10, 15-21, 25-31 and 34-35 and, therefore, these claims are allowable for this additional reason.

Claims 45-53: Finally, the Office Action rejects claims 45-53 because those claims are "method claims to be implemented on the system claims 3-44, and are similar in scope and content and are rejected under similar rationale." Thus, since claims 3-44 are allowable as cited above, claims 45-53 are allowable according to similar rationale set forth above.

Generality of the Rejections:

The Office Action has cited generally multiple-page portions of Sharma as the basis of its rejection of the claims in the present application. 37 CFR 1.104(c)(2) states:

> In rejecting claims for want of novelty or for obviousness, the examiner must cite the best references at his or her command. When a reference is complex or shows or describes inventions other than that claimed by the applicant, *the particular part relied on must be designated as nearly as practicable. The pertinence of each reference, if not apparent, must be clearly explained and each rejected claim specified.*

It is not apparent to Applicants which precise portions of the Sharma reference the Office intends to cite as teaching the precise claim elements of the pending claims. Accordingly, if the Office maintains the rejection of claims 1-53, Applicants respectfully request that these rejections be pointed out with greater particularity, as is required by 37 CFR 1.104(c)(2).

Conclusion:

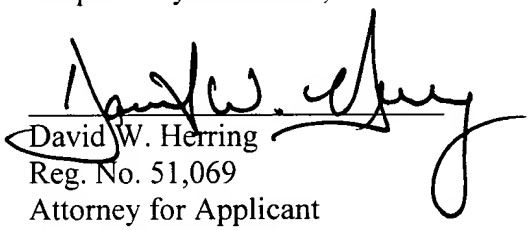
Applicants have amended claims 2, 6, 7, 11, 12, 19 and 29 to correct the informalities identified by the Office. Claims 1, 2, 3 and 45 have been amended in response to the rejection

under 35 U.S.C. §101. No new matter has been introduced as a result of these amendments. The phrase "means for receiving said utterance" in claims 1, 2 and 3 and the phrase "receiving said multimodal utterance" in claim 45 are supported at least at paragraph [0024] of the present application. Applicants have traversed the rejections under 35 U.S.C. §102(b).

For the foregoing reasons, claims 1-53, as amended, are within the technological arts and produce a useful, concrete, and tangible result. Therefore, claims 1-53 are directed to statutory subject matter under 35 U.S.C. §101. Also, for the above reasons, the cited portions of the Sharma reference do not anticipate all elements of claims 1-53 under 35 U.S.C. §102(b). Applicants have requested that, should the Office maintain the objection to claim 16 or the rejection of claims 1-53 under 35 U.S.C. §102(b), those objections/rejections be pointed out with the particularity required under 37 CFR 1.104(c)(2).

Applicant requests allowance of all claims.

Respectfully submitted,



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